Lakhbir Hayre
(212) 783-6349
lhayre@sbi.com

Sharad Chaudhary
(212) 783-6351
schaudhary@sbi.com

Whole Loan Prepayments and Modeling

The latest set of prepayment speeds for whole loan (WL) collateral continues to display the characteristics noted in an earlier article.[5] Figure 6 shows recent prepayment speeds on selected *generic WL vintages*,[6] and also displays current ratios of WL to agency prepayment speeds for comparable collateral. A detailed summary report of actual speeds for generic WL vintages combined across all issuers, and for these vintages by select issuers, is available for *Yield Book* and *Salomon Direct* users on **MB765.**

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[5] See *Bond Market Roundup: Strategy*, September 26th, 1997, Salomon Brothers Inc.

[6] We create WL generics by aggregating loans from different issuers and different deals by origination year and 50bps WAC buckets.

Figure 6. Historical Speeds on Agency and WL Vintages

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Orig Year	WAC Range	Nonagency Amt Out ($MM)	WAC	Age	(%) CPR for Last 1-Mo.	3-Mo.	12-Mo.	FNMA Cpn.	WAC	Age	(%) CPR for Last 1-Mo.	3-Mo.	12-Mo.	Ratio of Nonagency to FNMA Speeds for Last 3-Mo.	1-Year
30-Year															
1993	6.50-6.99	2,964	6.79	47	5.7	6.3	5.3	6.0	6.69	48	6.4	6.7	5.6	0.94	0.95
1996	7.00-7.49	642	7.27	18	6.2	6.5	4.2	6.5	7.22	20	5.8	5.8	4.4	1.12	0.95
1993	7.00-7.49	11,130	7.20	47	7.7	7.9	6.1	6.5	7.08	49	7.9	7.9	6.6	1.00	0.92
1996	7.50-7.99	3,019	7.73	18	6.5	6.2	4.0	7.0	7.64	18	6.8	6.2	4.4	1.00	0.91
1995	7.50-7.99	1,581	7.66	24	8.5	7.4	5.3	7.0	7.70	25	8.7	8.5	6.2	0.87	0.85
1994	7.50-7.99	4,858	7.66	43	8.3	8.7	6.6	7.0	7.48	44	8.6	8.5	7.0	1.02	0.94
1993	7.50-7.99	9,408	7.67	50	8.7	9.4	6.8	7.0	7.51	52	8.9	9.2	7.6	1.02	0.89
1996	8.00-8.49	3,896	8.19	15	16.0	15.8	8.1	7.5	8.13	15	11.7	10.1	5.6	1.56	1.45
1995	8.00-8.49	2,979	8.18	24	17.4	18.0	10.3	7.5	8.10	26	13.1	12.2	8.4	1.48	1.23
1994	8.00-8.49	1,233	8.16	40	17.3	15.3	9.7	7.5	8.00	41	11.2	10.9	8.1	1.40	1.20
1993	8.00-8.49	2,403	8.12	52	11.7	12.2	9.2	7.5	7.95	54	11.1	10.8	8.7	1.13	1.06
1996	8.50-8.99	2,966	9.65	14	28.7	25.0	15.3	8.0	8.53	15	17.5	15.2	9.3	1.64	1.65
1995	8.50-8.99	1,612	8.64	25	25.3	24.2	17.3	8.0	8.59	28	18.9	17.6	12.1	1.38	1.43
1994	8.50-8.99	1,030	8.69	38	25.5	24.9	16.7	8.0	8.54	39	17.9	16.7	11.6	1.49	1.44
1992	8.50-8.99	2,051	8.68	62	17.8	15.3	13.6	8.0	8.51	64	14.1	13.7	10.7	1.12	1.27
1996	9.00-9.49	705	9.14	14	33.1	25.9	22.2	8.5	8.95	15	24.3	22.1	15.9	1.17	1.40
1994	9.00-9.49	429	9.14	37	27.7	25.3	21.5	8.5	8.92	38	24.4	21.5	15.9	1.18	1.35
1992	9.00-9.49	915	9.16	64	19.0	19.5	20.5	8.5	8.92	66	18.2	16.5	13.1	1.18	1.56
15-Year															
1993	6.00-6.49	473	6.31	47	6.9	6.1	5.4	5.5	6.21	48	6.5	6.7	5.5	0.91	0.98
1994	6.50-6.99	1,353	6.74	43	6.7	7.6	5.9	6.0	6.61	44	7.3	7.8	6.4	0.97	0.92
1993	6.50-6.99	2,851	6.72	47	7.4	8.3	6.2	6.0	6.61	48	8.4	8.5	6.8	0.98	0.91
1996	7.00-7.49	483	7.21	17	7.3	8.1	4.9	6.5	7.10	17	7.0	7.1	5.0	1.14	0.98
1994	7.00-7.49	1,068	7.15	43	10.6	9.6	7.2	6.5	6.99	43	8.5	8.9	7.3	1.08	0.99
1993	7.00-7.49	2,888	7.17	50	8.5	9.2	7.6	6.5	7.01	51	9.7	10.1	8.3	0.91	0.92
1996	7.50-7.99	773	7.70	15	8.4	7.8	5.4	7.0	7.61	15	7.6	7.6	5.0	1.03	1.08
1995	7.50-7.99	445	7.70	24	8.3	8.0	7.7	7.0	7.56	25	10.6	10.5	8.0	0.76	0.96
1993	7.50-7.99	1,161	7.63	52	13.8	11.9	8.4	7.0	7.47	53	11.4	11.5	9.7	1.03	0.87
1992	7.50-7.99	1,219	7.69	60	10.2	9.7	8.8	7.0	7.56	61	11.5	11.3	9.5	0.86	0.93
1996	8.00-8.49	556	8.16	14	22.8	17.4	12.5	7.5	8.03	15	9.1	9.1	6.9	1.91	1.81
1992	8.00-8.49	560	8.16	62	18.3	19.1	15.2	7.5	8.02	63	13.2	12.7	10.7	1.50	1.42

Source: Salomon Brothers Inc.

Two key trends that we noted earlier, and that continue to play an important role (see Figure 6), are as follows:

• Speed differentials between moderately seasoned WL and agency discounts continue to decrease, even though WL discounts are still somewhat slower. Moderately seasoned WL discount speeds should overtake agency speeds in about a year if the California housing market continues to rebound.
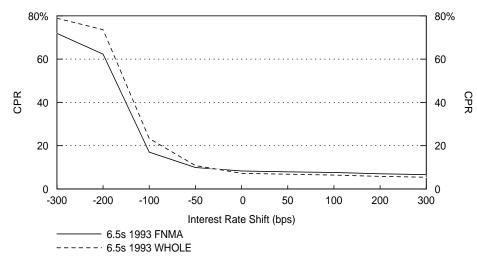
• WL premiums are much faster than comparable agency collateral, with the difference especially pronounced for newer coupons.

Differences Between the Agency and WL Models. Figures 7 and 8 show projected one-year and long-term speeds, respectively, for 1993 vintage agency and WL 6.5s. The projections reflect some of the differences noted for actual speeds, as they are captured by Salomon Brothers' WL Prepayment Model.[7] These differences are of two types: *data input differences* (such as loan balances) and *assumed differences in intrinsic borrower behavior or characteristics.*
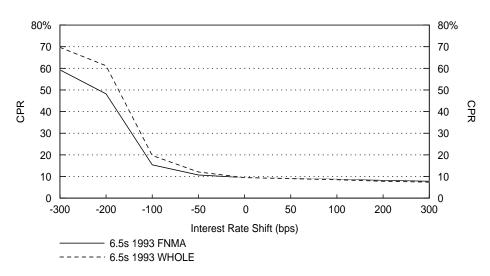
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[7] As with all our prepayment models, the Whole Loan Prepayment Model assumes prepayments arise from four sources: housing turnover, refinancings, curtailments, and defaults. See *Anatomy of Prepayments*, Lakhbir Hayre and Arvind Rajan, June 1995 for details.

Figure 7. One-Year Prepayment Projections for 1993 Vintage WL and Agency 6.5s

6.5s 1993 FNMA
6.5s 1993 WHOLE

Source: Salomon Brothers Inc.

Figure 8. Long-Term Prepayment Projections on 1993 Vintage WL and Agency 6.5s

6.5s 1993 FNMA
6.5s 1993 WHOLE

Source: Salomon Brothers Inc.

Input Data Differences. There are two key differences:

1. Geographical Distribution. WLs tend to have a higher California and Northeast concentration. The weak coastal housing markets over the last few years mean that equity growth for moderately seasoned WLs will be

less than for comparable agencies. For example, for the 1993 6.5s, we estimate the housing inflation index (a measure of the average home price increase for the surviving loans) is 1.14 for the agency coupon, but only 1.03 for the WLs.

2. Loan Balances. The average loan balance for the 1993 agency 6.5s is $103,000, and is $292,000 for the WLs.

Assumed Differences in Borrowers

• We assume that WL borrowers have **a higher mobility rate** because of demographics and their high California concentration. We capture this effect by using a higher Relative Mobility rate in our turnover submodel for whole loan borrowers.

• We assume that whole loan borrowers have **a greater propensity to refinance** because of demographics, and because of the economies of scale that reduce the variable costs associated with refinancing a high-balance loan relative to a low-balance loan. We model these effects by assuming WL borrowers have a greater proportion of "fast" refinancers, and have reduced variable costs when refinancing their loans.

• We assume that the higher loan balances carried by whole loan borrowers implies a **lower degree of burnout;** that is, their reasons for not refinancing are more likely to be temporary. We capture this by assuming a higher "steady-state" level of refinancings (i.e., the slowest class of refinancers have a higher refinancing curve).

• We assume that the greater financial sophistication of whole loan borrowers will make them more susceptible to media coverage and mortgage lender activity associated with historical lows in mortgage rates. We model this by assuming **an enhanced media effect** for whole loan borrowers.

Impact on Projections. The data input and assumed borrower differences manifest themselves in ways illustrated in Figures 7 and 8:

• Discount speeds are slow for moderately seasoned WL discounts because of weak housing markets, but over time, a recovery in California and the natural higher mobility of WL borrowers should lead to relatively faster WL speeds.

• A stronger *lock-in effect* (the disincentive to move due to currently holding a discount loan) for WLs because of higher loan balances also contributes to slower WL discount speeds for newer coupons.

• If rates decline, WL speeds accelerate at a faster rate than agencies, due to the assumed differences noted above. Over time, burnout implies that speeds on both agencies and WLs will decline, but a lower degree of burnout on the WLs keeps the differentials from converging.